(a) The first three terms of a geometric series are $x^{2}, 5 x-8$, and $x+8$, where $x \in \mathbb{R}$. Use the common ratio to show that $x^{3}-17 x^{2}+80 x-64=0$.

(b) If $f(x)=x^{3}-17 x^{2}+80 x-64, x \in \mathbb{R}$, show that $f(1)=0$, and find another value of $x$ for which $f(x)=0$.

(c) In the case of one of the values of $x$ from part (b), the terms in part (a) will generate a geometric series with a finite sum to infinity.
Find this value of $x$ and hence find the sum to infinity.


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